REMARKS

Overview

In the Final Office Action under reply, claims 24, 26-30, 38, 40, 91, and 92 have been examined, the remaining claims having been canceled previously. Applicants acknowledge with appreciation the Examiner's withdrawal of the rejection of claims 24-30, 38-40, and 91 under 35 U.S.C. §102(b) as anticipated by Hart et al. (US 3,150,977).

Claims 24, 26-30, 38, 40, 91, and 92 stand rejected under 35 U.S.C. §102(e) as anticipated by Parker et al., US 2003/0055190 A1 (hereinafter "Parker"). This rejection is overcome in part by the amendments made herein and is otherwise traversed for at least the reasons set forth below.

Amendments to the claims

Claim 24 has been amended to specify that the acrylic acid monomer is esterified with a poly(alkylene oxide) side chain. Support for this amendment can be found in paragraph **[00115]** of the original specification, as well as original claim 27. Therefore, no new matter has been added by this amendment.

Rejection under 35 U.S.C. §102(e)

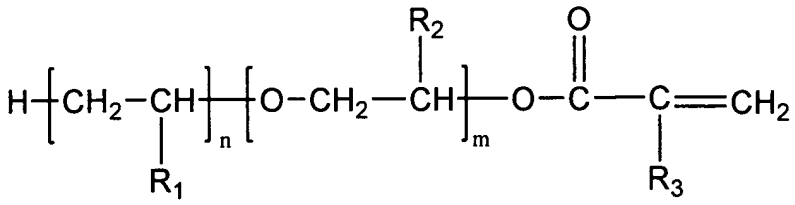
Claims 24, 26-30, 38, 40, 91, and 92 stand rejected under 35 U.S.C. §102(e) as anticipated by Parker. The Examiner cites the reasons set forth in paragraph 3 of the Office Action dated 28 December 2005. This rejection is traversed.

According to MPEP §706.02(IV), anticipation under 35 U.S.C. §102(e) requires that the reference "teach every aspect of the claimed invention either explicitly or impliedly. *Any feature not directly taught must be inherently present*" (emphasis added).

Claims 24, and 26-30 require, in part, "a *water-soluble*, hydrophilic adhesive polymer that is free of covalent crosslinks, wherein the polymer is prepared by polymerization of a composition *consisting essentially of* a hydrophilic monomer and an *acrylic acid monomer esterified with a hydrophilic side chain*" (emphasis added). Nowhere in Parker is it stated that any of the materials prepared therein are water soluble. A polymer meeting this description is therefore not directly taught by Parker. Because Parker does not directly teach water soluble

materials, anticipation of the present claims would require that the inherent properties of the materials of Parker include water solubility. As described below, however, the inherent features of the materials of Parker dictate that the materials cannot meat this limitation. Indeed, Parker teaches materials that are clearly *water insoluble*.

Parker is directed to polymer compositions with acrylic backbones and crystalline polyethylene side chains. In particular, the compositions of Parker comprise from 1 to less than 50 percent by weight of a synthetic wax monomer (SWM) of formula (I)

(I) 

wherein R_1 is H or CH_3, R_2 is H or C_1–C_5 alkyl, R_3 is H or CH_3, n=9–115, and m=0–1370. The remaining portion of the composition (from 50 to 99 percent by weight) comprises at least one second monomer, which may be selected from a broad class of monomers (described in paragraphs [0022] - [0031]).

It is important to note that, in formula (I) of Parker, n must be at least nine. Thus, all SWMs that are described in Parker have a sidechain comprising *at least nine ethylene and/or propylene units*. Although the materials of Parker may include materials that are hydrophilic, one of ordinary skill in the art would recognize that hydrophilic materials are not necessarily water soluble. In fact, Parker does not *explicitly* teach any materials that are water soluble, as required by the pending claims. An anticipation rejection under 35 U.S.C. §102 must therefore rely on the inherent teachings of Parker. It is well known in the art, however, that ethylene and propylene units are highly hydrophobic, and polyethylene and polypropylene are known to be water-insoluble. This is evidenced by pages VII/380-381 of *Polymer Handbook,* 3rd edition, Brandrup and Immergut, eds., Wiley, New York, 1989, which is attached hereto as Exhibit A ("[w]ater is a non-solvent for most polymers and is, therefore, only mentioned if similar polymers or derivatives are water soluble" - page 380, right-hand column). The water-insolubility of the polyethylene and/or polypropylene segments of the SWM sidechains clearly affects the solubility properties of the materials of Parker. Indeed, applicants have already described the

overwhelming preponderance of evidence that shows that the compounds of Parker are *not water soluble*.[1] This evidence includes the methods of polymerization used in Parker (i.e., organic solvent-based, emulsion, or suspension polymerizations, all of which are used to prepare water-insoluble polymers), as well as the utility of the polymers prepared in Parker (e.g., floor polishes, wood coatings, and water repellants). Water insolubility of the SWMs stems from the presence of a significant number of ethylene and/or propylene units. Therefore, the *inherent* teachings of Parker do not include water soluble materials. As Parker neither explicitly nor impliedly teaches a water soluble material, the rejected claims are not anticipated under 35 U.S.C. §102 by the disclosure of Parker.

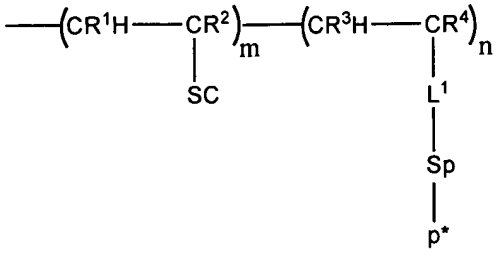
In further support of the novelty of the claims with respect to the disclosure of Parker, Applicants note that the language of claim 24 precludes any moieties that would render the polymers encompassed by the claim water-insoluble. According to MPEP §2111.03, which cites *In re Herz*, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976), "[t]he transitional phrase "consisting essentially of" limits the scope of a claim to the specified materials or steps 'and those that do not materially affect the basic and novel characteristic(s)' of the claimed invention" (emphasis in original). Claim 24 requires a polymer that is prepared from a hydrophilic monomer and an acrylic acid monomer esterified with a hydrophilic side chain. The scope of claim 24 is limited to materials that do not materially affect the basic and novel characteristics of these polymers. Water solubility is a property that is recited in the language of claim 24, and is a basic characteristic of the materials encompassed by the claim. Therefore, the materials encompassed by claim 24 may not contain any moieties that render the materials insoluble in water. Since the SWMs of formula (I) must contain at least nine ethylene and/or propylene units, the compounds of Parker necessarily contain materials that materially affect their solubilities. Accordingly, the materials of Parker do not satisfy the limitations of pending claims 24 and 26-30.

In addition, claims 29-30 are directed to a liquid film-forming composition consisting essentially of a water-insoluble film-forming polymer and the polymer of claim 24. Applicants note that Parker, in addition to failing to disclose any water soluble polymers that satisfy the limitations of claim 24, also fails to disclose any compositions that consist essentially of a water soluble polymer *and* a water-insoluble film-forming polymer. Accordingly, for all of the

[1] See pages 8-11 of applicants' Amendment under 37 C.F.R. §1.111, dated 3/23/06.

abovementioned reasons, the materials of Parker do not satisfy the limitations of pending claims 29-30. Applicants respectfully request withdrawal of the rejection of claims 24 and 26-30.

Turning next to claims 38, 40, and 91, these claims require a compound with the formula



wherein the symbols are described in the Listing of the Claims. Specifically, L^1 is selected from -O-(CO)-, -O-(CO)-O-, -(CO)-NH-, -O-(CO)-NH-, -S-S-, -S-(CO)-, and -(CO)-S-, and Sp is a poly(alkylene oxide) moiety. The Examiner cites Parker at page 3, paragraph 0031, which mentions 2-acrylamido-2-methyl-1-propanesulfonic acid as the at least one second monomer that may be copolymerized with the SWMs of formula (I). Such a copolymer does not, however, satisfy the limitations of claims 38, 40, and 91. Neither the SWM of formula (I) nor any of the at least one second monomers discussed in Parker (including the monomer cited by the Examiner) contain a repeat unit that contains $-L^1-Sp-p^*$ attached to the polymer backbone, wherein L^1 and Sp are as defined above. In particular, according to the definition of L^1, the repeat unit must have an oxygen, sulfur, amide, or -(CO)-S- moiety that is attached directly to the polymer backbone and further attached to a poly(alkylene oxide) moiety. None of the compounds in Parker contain such a repeat unit. Accordingly, the disclosure of Parker does not anticipate claims 38, 40, and 91, and withdrawal of the rejection is respectfully requested.

Turning finally to claim 92, the Examiner cites page 2, paragraph 0024 of Parker as disclosing the species as claimed. Claim 92 is dependent upon claim 24; accordingly, the arguments presented above with respect to claim 24 also apply to claim 92. In essence, Parker does not explicitly or impliedly disclose a water soluble material. Furthermore, the compounds of Parker contain material (i.e., ethylene and/or propylene moieties) which materially affects their basic properties (i.e., water solubility). For the reasons stated above, then, the disclosure of

Parker does not anticipate claim 92, and applicants respectfully request withdrawal of the rejection.

CONCLUSION

Applicants respectfully request an indication of allowable subject matter. Prompt mailing of a Notice of Allowance would be very much appreciated. Should the Examiner have any questions concerning this communication, or wish to discuss the application so as to preclude need for a further Action, he is invited to contact the undersigned at the number listed below.

Respectfully submitted,

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EXHIBIT A
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principle could not be applied was an alphabetical listing chosen. We believe that a typical solution behavior of similar polymers may be recognized more easily by this arrangement. When formulae are given, they refer to the main structures present in the polymers.

Copolymers have not been included in these tables. In their behavior they resemble more or less the properties of the dominating monomer, although they generally exhibit higher solubilities than the corresponding homopolymers.

Solubility normally increases with rising temperature, however, negative temperature coefficients in special solvents are observed.

Increase in molecular weight reduces solubility.

Increased branching increases the solubility compared to a linear polymer of the same molecular weight.

Properties change gradually within a series of homologous polymers as well as solvents. Solubility or dissolving power may increase, decrease, reach a maximum or minimum.

Certain combinations of two or more solvents may become non-solvents. Conversely mixtures of two or more non-solvents may sometimes become solvents. These possibilities should be considered if new solvent- non-solvent combinations are to be examined.

The classification of a certain compound as a non-solvent does not necessarily imply ability to act as a precipitant since this is influenced also by the nature of the particular solvent of a solvent-non-solvent pair. However, most non-solvents combine both properties.

The list of solvents and non-solvents for each polymer follows as simple arrangement by functional groups.

Homologues and closely related compounds generally have similar properties. When specific solvents or non-solvents are cited it is with the understanding that homologues and compounds with similar structures can be expected to exhibit similar properties. If class names are used, they refer to the most common compounds. Less common compounds, although falling into a class already mentioned,are additionally cited.

Water is a non-solvent for most polymers and is, therefore, only mentioned if similar polymers or derivatives are water soluble.

The data refer to room temperature unless otherwise stated.

The following abbreviations are used:

bzn	benzene
DMA	N,N-dimethylacetamide
DMF	N,N-dimethylformamide
DMSO	dimethyl sulfoxide
HMPT	hexamethylphosphoric triamide
TMS	tetramethylene sulfone
THF	tetrahydrofuran
W	water
sw	swelling
degrad.	degradation
dil.	diluted
conc.	concentrated
aqu.	aqueous
elev.	elevated
temp.	temperature
S.C.	substituent content
D.S.	degree of substitution
mol. wt.	molecular weight

B. TABLES OF SOLVENTS AND NON-SOLVENTS

Polymer	Solvents	Non-Solvents	Refs.
	1. MAIN-CHAIN ACYCLIC CARBON POLYMERS		
	1.1 Poly(dienes), Poly(acetylenes) (see also 6.1, 6.2)		
POLY(DIENES) UNSUBSTITUTED			
Poly(allene)	bzn, halogenated hydrocarbons.	hexane, methanol	86
Poly(butadiene)	hydrocarbons, THF, higher ketones, higher aliphatic esters	alcohol, lower ketones and esters, nitromethane, propionitrile, w, dil. acids, dil. alkalies, hypochlorite solutions	2,4,12
Poly(isoprene)	see Poly(butadiene)		
cis-, with chlorosulfonylisocyanato-groups	toluene	hexane, diethyl ether	256
POLY(DIENES) SUBSTITUTED			
Poly(2-tert-butyl-1,3-butadiene)	n-heptane, benzene, chloroform, carbon tetrachloride, diethyl ether, carbon disulfide	acetone, alcohol	51,52
Poly(5,7-dimethyl-1,6-octadiene)	see Poly(2-tert-butyl-1,3-butadiene)		
Poly(1-methoxybutadiene)			111
crystalline		heptane, bzn, methanol, dioxane, acetone	
Poly(2-chlorobutadiene)	bzn, chlorinated hydrocarbons, dioxane, pyridine, cyclohexanone, ethyl acetate, cyclohexane/toluene	aliphatic hydrocarbons, mineral oils, toluene (sw), alcohols, ketones, w, non-oxidizing conc. acids, incl. hydrogen fluoride	1,2,4,12
1,4-cis-	hexane, bzn, chloroform, ether, THF	methanol, ethanol, acetone	49

Polymer	Solvents	Non-Solvents	Refs.
Poly(2-chloromethylbutadiene)	dichloromethane, THF, toluene	methanol, ethanol	62
Poly(perfluoro-1,4-pentadiene)	hexafluorobenzene		
POLY(ACETYLENES)			
Poly(acetylene)	isopropylamine, aniline, DMF	cyclohexane, bzn, methylene chloride, carbon tetrachloride, methanol, pyridine, acetone,	38
Poly(phenylacetylene)			
low mol. wt.	carbon tetrachloride, methanol, acetone		35,63
higher mol. wt.	benzene	methanol	
Poly(diphenyldiacetylene)	cyclohexane, chloroform, dioxane	methanol	64
	1.2 Poly(alkenes)		
Poly(methylene)	see Poly(ethylene)		
Poly(ethylene)			
high density	above 80°C: hydrocarbons, halogenated hydrocarbons, higher aliphatic esters and ketones, di-n-amyl ether, as above	all common organic solvents at room temperature, more polar organic solvents even at elevated temperatures, anorganic solvents	1–4,12
low density	as above, but temperature 20–30°C lower, depending on degree of branching	as above	4
Poly(ethylene), chlorinated, 40% Cl at elevated temperature:	tetrahydronaphthalene, toluene, xylene, tetrachloroethane, chlorobenzene, cyclohexanone	chloroform, methanol, butanol, dioxane, THF, acetone, methyl ethyl ketone, methylacetate	239
chlorinated, 60% Cl	aromatic hydrocarbons, chloroform, THF, cyclohexane, acetone/carbon disulfide 1:1.	aliphatic and cycloaliphatic hydrocarbons, methanol, ethanol, acetone, methyl acetate.	239
Poly(propylene)			
atactic	hydrocarbons, chlorinated hydrocarbons at room temperature, isoamyl acetate, diethyl ether	more polar organic solvents with small hydrocarbon group even at elevated temperature	4
isotactic	see Poly(ethylene)		
Poly(1-butene), isotactic	see Poly(ethylene)		
Poly(isobutene)	hydrocarbons, chlorinated hydrocarbons, THF, aliphatic ethers, anisole, higher esters, higher alcohols, β, β-dichlorodiethyl ether, carbon disulfide, diethylsulfide	lower ketones and esters, lower alcohols, lower organic acids, nitromethane, propionitrile	1,3,4,12,121
Poly(4-methyl-1-pentene), isotactic	see Poly(ethylene)		
Poly(cyclopentylethylene)	toluene, diethyl ether, chloroform	methanol	53
Poly(cyclohexylethylene)			
atactic	hydrocarbons, chlorinated hydrocarbons, THF	alcohols, ethers, dioxane, esters, ketones	226
stereospecific	at elevated temperature: methyl cyclohexane, decahydronaphthalene, tetrahydronaphthalene, benzene, xylene, chlorobenzene, o-dichlorobenzene, toluene, diethyl ether (partially), chloroform	heptane, methylethylketone, nitrobenzene	227
Poly(cyclohexylalkene)s		methanol	58
Poly(cyclohexenylethylene)			
atactic	aliphatic hydrocarbons	ethanol, acetone	217
isotactic	aromatic hydrocarbons, halogenated hydrocarbons (partially)	aliphatic hydrocarbons, ethanol, acetone, diethylether	217
Poly(pentenamer) (Poly(cyclopentene)) $+CH=CH(CH_2)_3+_n$	hydrocarbons, chlorinated hydrocarbons	alcohols, ethers, aliphatic ketones	131
Poly(1,1-diphenyl-2-vinylcyclopropane)	chloroform	methanol	241
Poly(p-anthrylphenyl-ethylene)	bzn., chlorobenzene, methylene, chloride	methanol, ethanol, hexane, W	242
Poly(1-methyl-bicyclo-|2.2.1|-hept-2-ene)	chlorobenzene, p-xylene	methanol	243
	1.3 Poly(acrylics), Poly(methacrylics)		
Poly(acrylic acids)			
Poly(acrylic acid)			
atactic	alcohols, formamide, DMF. W, dil. alkali solutions	hydrocarbons, esters, ketones, dioxane at higher temperature(sw)	1,2,4,7,12
isotactic	dioxane/water (80:20)	dioxane	

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